

High-Performance Computing at Virginia Commonwealth University and the Center for the Study of Biological Complexity: The Virtual Parasite Project

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While genomics is a priority at VCU and at the Center for the Study of Biological Complexity (CSBC), high performance computing (HPC) - at the level of the Grand Challenge problems - is now a major focal effort. In this presentation, we will illustrate the high performance efforts by examining one of the priority CSBC research efforts entitled the *Virtual Parasite Project*. The VPP is the VCU CSBC's effort to create an HPC, completely transportable, public domain, ultra-largescale computational model of parasite dynamics at multiple levels of hierarchical content from molecular to geographic. The effort has focused on an initial model dealing with the parasite *T. cruzi*, which is the causal agent in Chagas disease, a disease that currently infects over 10 million people worldwide. We will talk about the model, as it currently stands, examine some of the initial benchmarks using various computational methodologies, and discuss some of the future efforts of the project. We will illustrate some of the initial results with a movie clip.

About the Speaker

Tarynn M. Witten has been involved in grand challenge high performance computing since the early days of vector supercomputing. She was a member of the ETA Systems Computational Biology group, a member of the Control Data Corporation Computational Methods group, and the Director of Applications Research and Development at the University of Texas System Center for High Performance Computing. Dr. Witten has served as a computational consultant for Eli Lilly, Amgen, and a number of other major pharmaceutical houses. She is one of the initial organizers of the Computational Biology & Medicine section talks at the Supercomputing Conferences. Dr. Witten is a Fellow of the Gerontological Society of America and holder of the Inaugural Nathan W. Shock New Investigator Award from the Gerontological Society of America. Tarynn is a member of the consulting consortium of the Healthy People 2010 Project and has presented over 150 international scientific talks, panels and training sessions on largescale computational methods and problems in the Life Sciences and Medicine, serving as the author of the Computational Biology and Medicine entry for the Encyclopedia of Computer Science. Dr. Witten is listed in Who's Who In International Science - 1989/90, Who's Who In Computing - 1989/90, Who's Who In Health & Medicine-1990/91, Who's Who Worldwide - 1990/93/94, Who's Who In Science And Engineering - 1992/93/94, Who's Who In The South And Southwest - 1992/94/97, Who's Who In American Education - 1993/94, International Who's Who of Information Technology 1996/1997, Who's Who In the World 2000, International Who's Who of Professionals 2000, and as one of the Top 2000 Women Scientists in the World 2001.